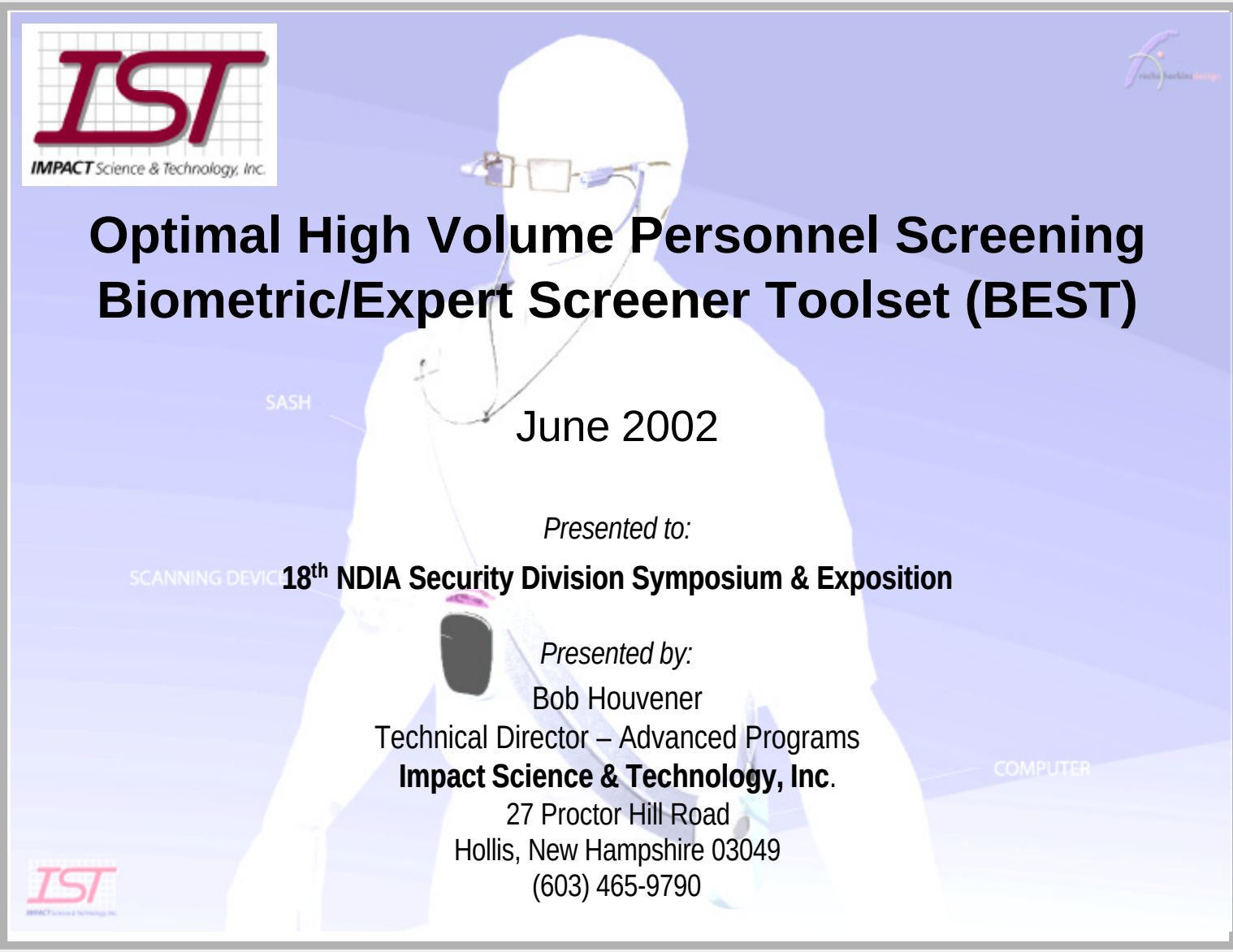


Optimal High Volume Personnel Screening Biometric/Expert Screener Toolset (BEST)

June 2002

Presented to:

18th NDIA Security Division Symposium & Exposition

Presented by:

Bob Houvener
Technical Director – Advanced Programs
Impact Science & Technology, Inc.
27 Proctor Hill Road
Hollis, New Hampshire 03049
(603) 465-9790

Optimal High Volume Traveler Screening

Agenda

I. Impact Science & Technology, Inc.

II. Problem – Current Screening Methods

III. Proposed Solution – BEST

IV. BEST – Operational Capability

Impact Science & Technology, Inc. (IST)

- Private, Small Business, Formed in 1995, Government Contractor - 95+% of employees have Top Secret Clearances.
- Full cleared facilities in Hollis, NH (Corporate Headquarters), Annapolis Junction, MD & Aurora, CO
- Capabilities:
  - Systems Engineering – Leading edge very high volume real-time processing systems.
  - Software Development – Complex, high performance, real-time s/w development
  - Custom Hardware - As needed, from chip to full system level
  - Systems Integration, Deployment and Operations - world-wide
  - Analysts – Highly experienced and recognized expertise.

Current Screening Methods

- **Screening Personnel have**:
  - Limited training
  - Traditionally high turn over
  - Very limited tools
  - Poor connectivity to data and experts
- **Current ID technology is <u>not effective</u>**!
  - False ID documents prevalent / undetected.
  - Biometrics implementations typify garbage in / garbage out computational model – high quality data is needed for high quality results (see FRVT2000Report*)

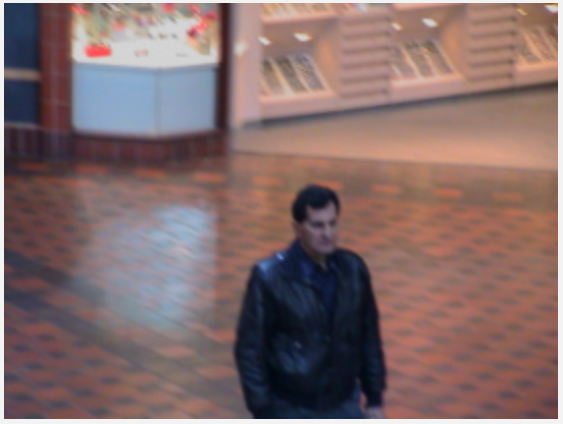
This combination leads to a LARGE national security hole!

* The Facial Recognition Vendor Test 2000 (FRVT2000) was a testing process for vendors in the Facial Recognition product area and was co-sponsored by the DoD Counterdrug Technology Development Program Office, National Institute of Justice and the Defense Advanced Research Projects administered in May-June 2000, documented and a report issued.

Technology Issues – Facial Recognition

- Fixed camera's combined with moving targets.

- Poor camera to subject angles (pose).



Technology Issues – Facial Recognition

- Large view areas reduce resolution and increase face finding problem.

- Highly varying scenes make face finding difficult.

Technology Issues – Facial Recognition

- Variation in subjects versus fixed camera height.

- Poor lighting control / long camera to subject distances.

Problem Summary

- **No system exists that supports:**
  - **Token based or Tokenless trusted traveler programs AND**
  - **Robust and instant watch list screening**
- **No real-time expertise is available for screeners concerns or false alarms from state-of-the-art but inadequate biometrics.**
- **Security checkpoint personnel are severely overburdened; lack of efficient tools, communications capabilities and processes.**
- **Purchaser, Passenger & Baggage correlation is not secure, uniform, accurate or auditable for public transportation platforms.**
- **An Effective/Deployable system has not been developed to date.**

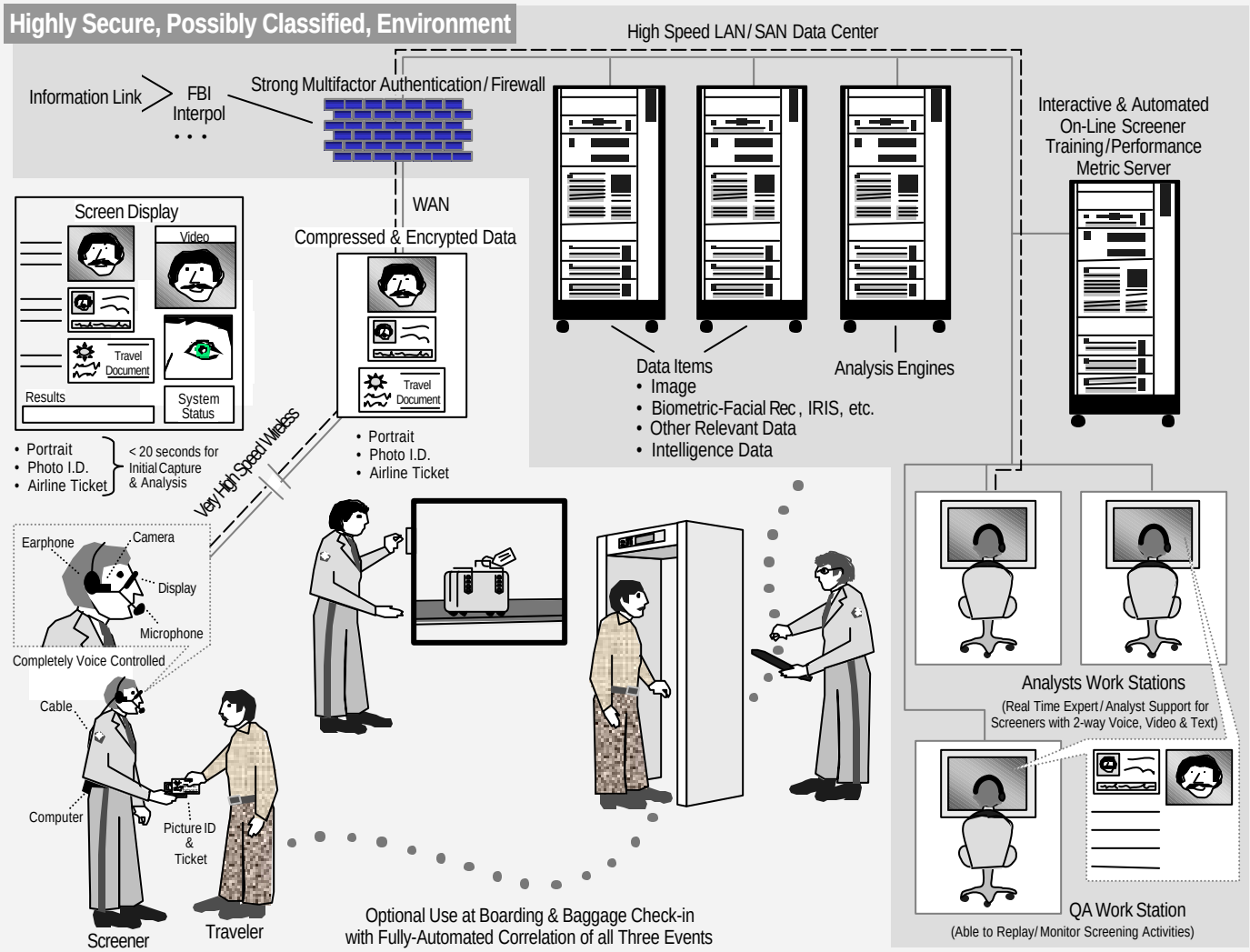
Solution: Biometric/Expert Screener Tool (BEST)

Optimal capture of biometric data / real-time access to experts leads to highest probability of terrorist detection with least traveler impact.

TRANS

BEST Clip

QA



BEST: Field Operator View

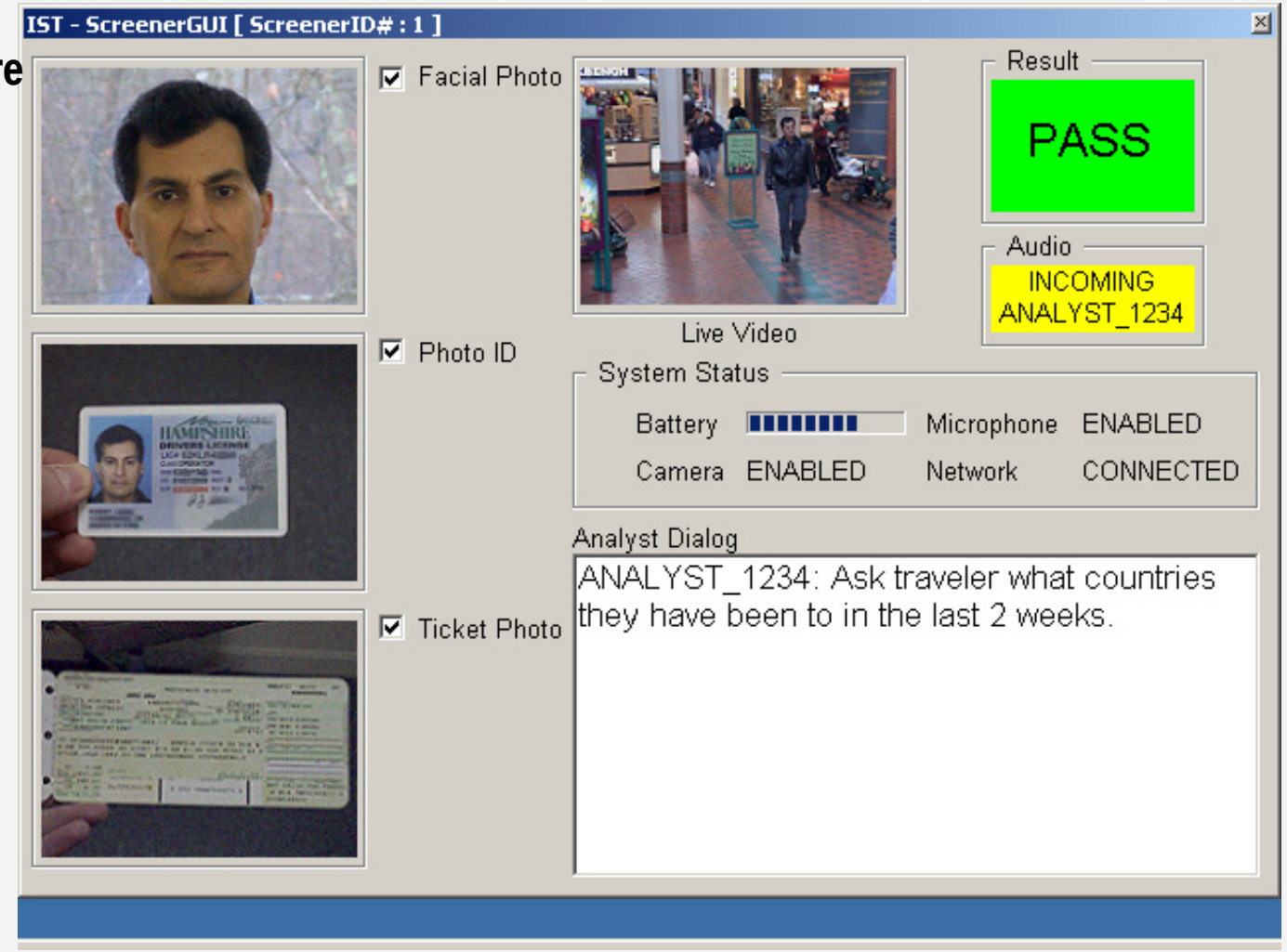
BEST: Field Operator Display

Instant hands-off capture of:

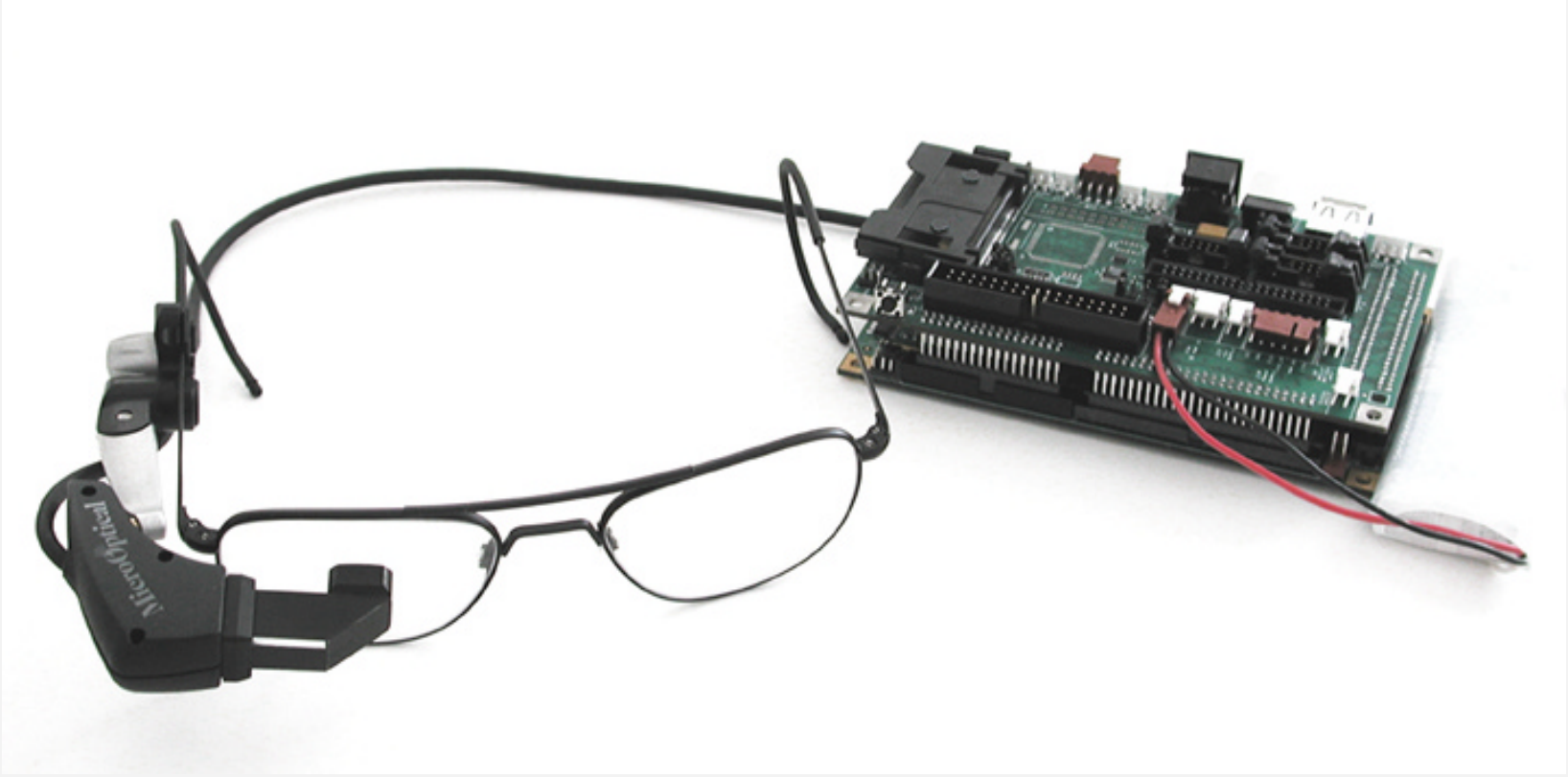
- **Traveler Face**
- **Documents**
- **Future Biometrics**
  - **Iris**
  - **Finger Image**

Plus:

- **Robust Voice Based System Control**
- **Automated Analysis**
- **Clear Audit Trail**
- **Communications**
  - **Audio (Phone)**
  - **Text**
  - **Video**



BEST: Near Term Form Factor



Why BEST?

- Mobile / Interactive screener to traveler positioning – provides **optimal**:
  - Mug shot quality data capture for face / non-face biometrics (Iris)
  - Document / data / voice capture
  - Leading to **optimal**:
    - Detection versus false alarm rates
    - Terrorist detection and tracking
    - Portal throughput and customer experience

Why BEST?

- Automated performance metrics / real-time automated interactive training = peak performance and reduced cost.
- Real-time audio / text access to centralized, secure, compartmented, screening experts and data.
- Highly efficient automated real-time biometric screening reduces manpower requirement.
- Real-time Collection / Analysis of Purchaser, Passenger and Baggage data yields a secure, uniform, accurate and auditable process
- Provides Automated Training and QA of Screeners and Analysts

Biometric Screening: A Systems Based Approach

- For **verification** (preauthorized or trusted) if we assume:
  - An oral or physical token for 1:1 or 1:few match
  - FRR of 2% on first pass biometric with 5-7 seconds per screening
  - No secondary biometric
  - 15 seconds for remote human False Reject secondary screen

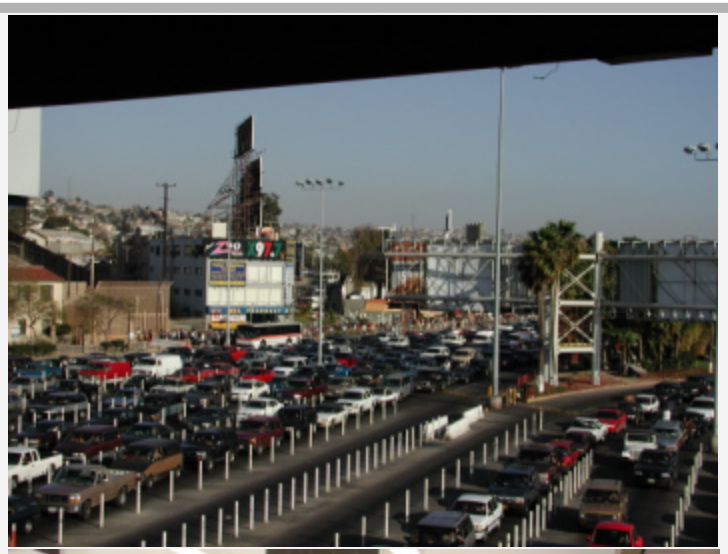
  Yields ~1 man-hour of secondary screening time / 10k screened

- For **identification** (watch list) if we assume:
  - A small target list
  - False Match Rate (FMR) of 15% on first pass biometric
  - No secondary biometric
  - 15 seconds for remote human False Match secondary screen

  Yields ~6 man-hours of secondary screening time / 10k screened (~200 people for 500 million primary screenings per year)

BEST – National Security Applications

- Port of Entry and Airport Screening
  - Trusted Traveler
  - Watch list
- High Security Sites
  - Nuclear Power
  - Government Facilities Worldwide
- First Responders
- National Security Events



Questions?

Status:

- High risk components prototyped
- End to end system prototype in test
- Customer, integrator and partner discussion underway

Contact info:

Bob Houvener, Technical Director – Advanced Programs
IMPACT Science and Technology, Inc (Corp. HQ)
27 Proctor Hill Rd, Hollis, NH 03049-1197
Ph: 603-465-9790x144; rchouvener@impactsci.com